SURVEY RESULTS

OVERVIEW OF NONPROFIT SECTOR'S R&D ACTIVITIES

The contribution of nonprofit organizations (NPOs) to research and development (R&D) activities in the United States is complex and difficult to measure. Many NPOs perform intramural R&D; others fund extramural R&D activities but do not conduct the R&D themselves; and a number of NPOs both perform and extramurally fund R&D. NPOs that fund R&D may provide such funds both to other NPOs and to institutions outside of the nonprofit sector. Various types and degrees of affiliation and cooperation, especially in cases where research institutes maintain close working relationships with universities or hospitals, make it particularly difficult to track the level and flows of NPO R&D spending.

The nonprofit sector performed about 3 percent ($7.3 billion) of total U.S. R&D in 1997 ($212 billion). Its share was similar to the figure reported for 1973, the last time a survey of this sector's R&D performance was conducted. NPOs' 1997 intramural R&D expenditures were 4-percent more than the $7.1 billion estimate for 1996. The 1997 amount equated to an average annual current dollar increase of 10 percent (5 percent when adjusted for inflation) over the $0.8 billion expended in 1973 (tables A-1, A-2, and A-3).[1]

NPO performers funded an estimated $1.5 billion for extramural[2] R&D in 1997 and $1.3 billion in 1996, an increase of almost 13 percent between 1996 and 1997 (table A-13).[3] An unknown amount of these extramural R&D funds were provided to other NPOs and are undoubtedly included in the totals reported for NPOs' intramural R&D performance.

Other NPOs fund R&D, but do not perform R&D. R&D funding from NPOs that only fund R&D was estimated to be $2.9 billion in 1997 and $2.7 billion in 1996 (tables B-1 and B-2). Part of these NPO R&D funds are provided to NPO R&D performers and part are provided to R&D performers outside of the nonprofit sector. Data from nonprofit R&D performers and nonprofit R&D funders are discussed separately below.

NONPROFIT R&D PERFORMERS

After a lapse of 23 years, the National Science Foundation (NSF) once again surveyed the nonprofit community to quantify the amount of R&D that was being performed in that sector of the U.S. economy. The 1996 figure of $7.1 billion and the 1997 figure of $7.3 billion were higher than anticipated. As a result, there may be a need for more frequent data collections from this sector.

NPOs reported that the Federal Government provided approximately half the funds used in their R&D performance in 1996 and 1997 (table A-1). In 1973, nonprofit organizations received about 62 percent of the funding for their R&D from the Federal Government.

The importance of funding from "other sources" that include organizations' own funds, all foreign sources, and donations from individual persons[4] increased from 17 percent in 1973 to 30 percent in 1997. Anecdotal evidence indicates that most of "other sources" are from organizations' own funds.[5] Respondents received an additional 6 percent of their 1997 intramural R&D funds from "other nonprofit organizations." Thus, as much as 36 percent of the 1997 R&D performed in the nonprofit sector may have been funded by the sector itself.

[1] Most dollar values and growth reported here are in current dollars. Constant (1996) dollar R&D was $2.3 billion in 1973 and $7.2 billion in 1997. Readers wishing to calculate real changes for other data items can deflate current dollar values to constant dollars. The GDP deflator, based on constant 1996 dollars, is 34.02 for 1973, 100.0 for 1996, and 101.66 for 1997.

[2] Extramural R&D funding includes all R&D contracts, subcontracts, all costs of R&D the NPOs contracted out or passed through to sub-recipients, and R&D conducted by others outside the NPOs with funds distributed through or by the NPOs. In contrast, intramural R&D performance includes all direct and indirect costs incurred for R&D performed by people engaged in R&D at the respondent nonprofit organizations.

[3] Extramural R&D expenditures were not collected in the 1973 survey.

[4] "Other sources, including organization's own funds" includes funds other than those from Federal, state and local governments, universities and colleges, other nonprofit organizations, or industry. Other sources include gifts, grants, or contracts received from private individuals and all foreign sources. Organization's own funds include earnings from investments, disbursements from capital, membership dues and assessments, liquidation of assets, unrestricted funds from all sources except other nonprofit organizations, and earnings from miscellaneous sources such as publication sales, admissions, advertising, etc.

[5] Members of the NSF Special Emphasis Panel, which represented nonprofit organizations and groups, said most of the "other sources" of nonprofit organizations would be their own funds. The Panel met on December 10, 1996, at NSF's Arlington office.

Top 10 Respondents[6] Account for 18 Percent of Nonprofit R&D Performance

The 10 respondents with the largest R&D expenditures accounted for 18 percent of total nonprofit expenditures in both 1996 and 1997 (table A-11). Eight of the 10 also participated in the 1973 survey.[7] In 1973, the top 10 respondents performed 43 percent of all nonprofit intramural R&D. This indicates that R&D in the nonprofit sector may be less concentrated in 1997 than in 1973 despite the fact that Howard Hughes Medical Institute (HHMI) increased its R&D expenditures from $1.8 million in 1973 to $352.0 million in 1997. HHMI's increase is a unique case and reflects a huge increase in its endowment.

R&D by Character of Work

For 1997, nonprofit R&D performers reported that the greater part ($4.0 billion or 54 percent) of their intramural R&D work was in basic research. This contrasts with the 40-percent share for basic research reported in 1973 (table A-4).

The proportion of nonprofit expenditures used for applied research declined over the quarter century. In 1973, 42 percent of nonprofit R&D expenditures supported work in applied research. This share declined to 30 percent ($2.2 billion) in 1997. Part of this shift is a result of R&D changes at the HHMI, the largest respondent for 1996 and 1997 in the survey. In 1973, all of its research expenditures—$1.8 million—were used for applied research. In 1976, HHMI began to alter its emphasis; by 1997, all $352 million of its work was performed in basic research.

In contrast to the shift away from applied research toward basic research over the 1973-97 period, development's share remained relatively steady, accounting for 16 percent ($1.1 billion) in 1997 and 18 percent ($0.1 billion) in 1973.

[6] The list in table A-11 is a list of respondents. There are several large nonprofit organizations that did not respond to the survey questionnaire. These large NPOs may have made the top 10 list. Totals are adjusted for unit nonresponse.

[7] The two respondents among the 1997 top 10 that did not participate in the 1973 survey are Fred Hutchinson Cancer Research Center, founded in 1971, and SEMATECH, Inc, founded in 1987.

Performers by Type of Organization and Character of Work

NPOs in the 1996 and 1997 survey were asked to classify themselves into one of nine types of organizations, which included separate listings for university-affiliated hospitals and other nonprofit hospitals.

Type of Organization	Number of NPOs performing R&D in the 1996 and 1997 survey
Total respondents	233
· Research institute	151
· University-affiliated hospital	12
· Other voluntary nonprofit hospital	23
· Private foundation	19
· Professional or technical societies	8
· Science exhibitors	7
· Academic consortia	6
· Industrial consortia	4
· Trade associations	3

"Research Institutes" was the self-described organizational structure of 151 of the 233 respondents. Research institutes performed almost two-thirds of the $7.3 billion nonprofit intramural R&D in 1997. Hospitals, the next largest group, performed 19 percent, or $1.4 billion (table A-1). Because of low coverage rates of such organizations, in most tables reported here the last five listed institution types are grouped under a general "other nonprofit organizations" category.

Fields of Science and Engineering

The life sciences were the focus of most nonprofit R&D in 1997. At $5.3 billion, the life sciences accounted for 72 percent of 1997 intramural expenditures, up considerably from a 45-percent share in 1973 (tables A-8, A-9, and A-10).[8]

[8] Certain aspects of the 1996-97 survey may have exaggerated the concentration of R&D in the life sciences. Specifically, the Association of Independent Research Institutes (AIRI) encouraged its members to respond. AIRI specializes in biomedical research, and 49 (21 percent) of the 233 survey respondents were AIRI members.

Extramural R&D Expenditures by Nonprofit Performers

Nonprofit organization R&D-performers funded $1.5 billion dollars of *extramural* R&D in 1997. This is a 13-percent increase from 1996 funding levels of $1.3 billion (table A-13).

Extramural S&E R&D expenditures were defined in the survey as "all R&D contracts, subcontracts, all costs of R&D your organization contracted out or passed through to sub-recipients, and research conducted by others outside your organization with funds distributed through or by your organization."

Data from the current survey show that external funding of R&D is quite common, with 59 percent of the nonprofit performers funding some extramural R&D in 1997. Research institutes funded almost 45 percent of all the reported extramural R&D in 1996 and 39 percent of the total in 1997.

Performers' Data in other NSF Publications

The 1996-97 survey provided a new expenditures benchmark for R&D performance by NPOs, which was higher than previous NSF estimates for this sector. For example, NSF staff estimated nonprofit R&D performance at $5.6 billion for 1997 before the current survey data became available. These lower estimates were based on nonprofit data in other NSF R&D expenditures surveys. With the exception of Federal R&D funding to the nonprofit sector (see below), the new higher NSF estimates, based on the results of the current nonprofit survey, are incorporated in *National Patterns of R&D Resources: 2000 Data Update* at http://www.nsf.gov/sbe/srs/nsf01309/start.htm.

For an estimate of Federal funding in support of NPO R&D performance reported in the *National Patterns,* NSF will continue to rely on information provided by the Federal agencies that fund NPOs (as reported to the NSF *Survey of Federal Funds for research and Development*). In 1997, Federal agencies reported obligations of $3.0 billion to NPOs and of $0.8 billion to federally-funded research and development centers administered by NPOs. These amounts compare with the $3.7 billion in Federal R&D funding reported by NPO performers on the current nonprofit R&D survey. The decision to use source-reported, rather than performer-reported, data in the *National Patterns* reports is because the Federal Funds survey is—and will continue to be—collected annually.

Nonprofit R&D Funders

Data were collected from a second group of nonprofit organizations: those that funded, but did not perform R&D. NSF estimated that the funders gave $2.9 billion for R&D in 1997 and $2.7 billion in 1996 (tables B-1 and B-2). This is an annual current-dollar increase of 8 percent. In addition, the NPO sector is estimated to have funded R&D buildings, fixtures, and depreciable equipment (R&D capital support) worth $242 million in 1997 and $159 million in 1996.

NSF attempted to contact throughout all 50 states and the District of Columbia each nonprofit organization that was thought to provide R&D funds to other organizations. A CD-ROM list was obtained from the Foundation Center in New York City. Several other funders of R&D were included with certainty because they were on the list from the 1973 survey or because their R&D funding had recently been reported in the media. At the survey's conclusion, 110 funders of R&D from 31 states and the District of Columbia had responded to the survey.

Extramural R&D Expenditures from Nonprofit Funders

Domestic U.S. organizations were the designated recipients of 90 percent of the R&D funds and non-U.S. organizations received 10 percent. NSF estimated the funders gave U.S. domestic organizations $2.6 billion in 1997 and $2.4 billion in 1996 (table B-3). Colleges and universities were the major recipients of R&D funds. They received 44 percent of all R&D funds from the nonprofit organizations in 1996 and 47 percent in 1997. University-affiliated hospitals received additional funds—about 5 percent of the totals in 1996 and 1997.

Nonprofit funders reported that $411 million (14 percent) of their total 1997 R&D funding was provided to other nonprofit organization R&D performers. These organizations included research institutes, hospitals, professional and technical societies or academies of sciences, private foundations, science exhibitors, nonprofit industrial consortia, nonprofit academic consortia, and agricultural cooperatives. (No agricultural cooperatives responded to the NPO performers' part of the survey, but some NPO funders reported giving R&D funds to agricultural cooperatives.)

The category "other types of U.S. institutions" received $597 million, about 20 percent of the funders' 1997 R&D total. Ninety percent of the funding for "other types of institutions" went to state government researchers. Another 3 percent was "undistributed by organization" because a few funders did not keep records on types of organizations they funded. Additional funding to the "other types of institutions" category went to Federal or international organizations.

Funding of Medical R&D by Nonprofit Organizations

Two-thirds of the R&D funds given by the funders in 1996 and 1997 to domestic organizations were designated for medical R&D (table B-3). As was expected, funds given to university-affiliated hospitals and to other voluntary nonprofit hospitals were highly concentrated in medical R&D.

Funding of R&D Capital Support

Funders were asked how much R&D capital support they provided in 1996 and 1997. NSF estimated that the funders provided $242 million in 1997 and $159 million in 1996 (tables B-1 and B-2). The R&D capital support increase is more than 50 percent between the two years, but since it is based on only 17 of the 110 funders in 1996 and 16 funders in 1997, NSF cannot report it with confidence.

Independent foundations were the major providers (among the funders) of R&D capital support. Family foundations and public charities also funded some R&D capital support in 1996 and 1997.